Chapter 10- Transformations (Five Part Lesson)

NGSSS:

* MA.7.G.4.2 Predict the results of transformations and draw transformed figures, with and without the coordinate plane.
* MA.7.G.4.3 Identify and plot ordered pairs in all four quadrants of the coordinate plane.

Goals/Objectives:

1. Students will plot one or more points and demonstrate 3 types of transformations (reflection, rotation, translation) to that point.
2. Students will choose 2-3 ways to explain 3-4 types of transformations including reflection, rotation, translation and/or dilation.

Prior Knowledge:

* Teacher (ESE) will have students imagine different basic dance movements to associate and hook translations to already present knowledge. For students who do not readily identify dance movements, teacher will present this animated clip from the textbook, Glencoe McGraw-Hill Course 2, <http://glencoe.com/sites/common_assets/mathematics/ebook_fl/9780078916434/mhssg_flv_player.html?videofile=http://glencoe.com/sites/common_assets/mathematics/0078916437/animations/gn_g7_op_transformation.flv&colorfilter=0x2f4d8f>
* Teacher (content) will have students review concepts from chapter 1 regarding parts of a coordinate plane.
* Teacher (content) post POD (Problem of the Day) on board to review previous idea or tie day’s lesson to previous concept, Teacher (ESE) probe and present class’ answer

Materials:

* Wall, paper and floor coordinate planes
* Chalk, projector (doc cam), computer, pen/pencil
* Textbook
* Timer
* POD (Problem of the Day) on board [review previous idea or present a component of day’s lesson]

Motivation:

* Choice board (tic-tac-toe assignments)- see attached Appendix 1
* Use of student selected music
* Cooperative learning/paired partners- guided discovery method
* > 70% mastery on tic-tact-toe probe earn token- see attached Appendix 2

Lesson Procedures:

1. Teacher (content)- post POD (Problem of the Day) on board prior to
2. Teacher (ESE)- probe for and present class’ answer to POD
3. Teacher (content)- review previous day’s HW (homework); Teacher (ESE) roam and conference with students’- if necessary, small group for reteach/absences
4. Teachers (content & ESE)- review coordinate plane (Chp 1 concepts) using wall, floor models
5. Teachers (content & ESE)- Reveal 3-6 answers from day’s lesson in Check Your Understanding section of practice in textbook, invite students to use the wall or floor model to think about solutions
6. Students, already paired in seating arrangement, have 6 minutes on timer to read and attempt to discover the method to arrive at given answers, teachers may not provide help but may encourage and pose questions (aside from verbatim reading accommodation)
   1. Teacher (content or ESE)- may pull small group to work on reteach
7. Teacher (content)- probe students for ideas and attempts they tried in solving the given problems and answers
   1. Teacher (ESE)- scribe student responses on board or projector
8. Students provide steps to solve the problems for unified procedure and class notes as teacher (ESE) scribes and teacher (content) poses guiding questions
9. Students given 10 minutes to apply steps to remaining problems to test validity of steps, they may ask for help from teachers at this point, teachers (content & ESE) monitor students progress and repeat/clarify instruction as needed
10. Teachers (content & ESE)- probe if steps need to be modified or clarified with whole group, students provide feedback
11. Teacher (content)- verbally relate transformation of day to dance move, teacher (ESE) demonstrates “move”
12. Students who show work by applying the steps to the given problems may begin independent practice; students who need the class period to finish applying the process to the classwork will complete the independent work for homework
13. Students will submit their POD answer and classwork as their exit slip

Extensions: Choice Board (tic-tac-toe)- see attachment Appendix 1, students may complete more than 2-3 in order to further understanding and challenge self

Assessment:

* 2-3 products submitted from choice board- assessed by teacher (ESE)
* 2 Daily probes pulled through oral or written independent responses- assessed by teacher (content)

Accommodations/Modifications: (we do not have any students on access points)

* Provide access to computer and online textbook for students to hear the textbook read-aloud (ESE & ESOL)
* Provide access to computer and online textbook for students to view clip of dance association with transformations (ESE & ESOL)
* Allow student with ESOL to find native language word for transformation and share with class

Access Point (if any students were on access points): Identify examples of slides (translations), turns (rotations), and flips (reflections) of geometric figures using pictures and objects.

* Provide student with picture from textbook and allow students to physically move the picture to demonstrate transformation solution instead of draw, write about or “calculate”

Appendix 1

Chapter 10: Transformations

Due Date: Daily HW must be submitted each after assigned. Other Tic-Tac-Toe items due Friday.

|  |  |  |
| --- | --- | --- |
| Mathematical/Logical  Use a computer (or some technology) to demonstrate or explain functions that rotate, translate, reflect and dilate a picture or icon. | Music  Complete the “Walk It Out” portion of the Point Dance Assignment to your school appropriate selection of music. | Interpersonal  Choose 1-3 other people to work on the Point Dance. |
| Linguistic/Verbal  Complete the “Write It Out” portion of the Point Dance Assignment. | Required: Daily HW  Pg 551 5-15 (multiples of 5), 18, 19  Pg 559 6-18 (multiples of 3), 26  Pg 568 6-15 (multiples of 3), 26, 27  Pg 573 9-21 (multiples of 3), 26, 27 | Visual/Spatial  Complete the “Map It Out” portion of the Point Dance Assignment. |
| Kinesthetic/Movement  Complete the “Walk It Out” portion of the Point Dance Assignment. | Intrapersonal  Journal or blog (on edline under homework hand-in under the assignment folder) narratives explaining transformations: translation, reflection, rotation and dilation. | Nature  Create and label a poster of pictures, drawings or actual samples of items in nature that demonstrate reflection, rotation, translation and dilation. |

Appendix 2

Menu:

Treat (food, calculator, school supplies) 5 tokens

Bonus Points on quiz or test, up one letter grade 10 tokens

Get out of 1 HW assignment 15 tokens

20 Bonus Points 20 tokens